



## NASA STTR 2015 Phase I Solicitation

### T8.02 Visible to Far-Infrared Absolute Radiance Developments

Lead Center: LaRC

Participating Center(s): GSFC

This solicitation seeks to advance the state of the art in absolute radiance measurements in the visible through the far-infrared (0.3 - 50  $\mu\text{m}$  wavelength). Technologies to increase accuracy, precision, and sensitivity of absolute radiance measurements are desired. These wavelengths are of specific interest to remote sensing applications for both Earth science and planetary exploration missions.

Areas of interest include:

- Develop detector technologies to improve absolute radiance measurements in the infrared (1 - 50  $\mu\text{m}$  wavelength) by increasing sensitivity, decreasing noise levels, and reducing or removing cooling requirements.
- Study and thoroughly characterize the non-linearities present in infrared detectors, specifically pyroelectric and mercury cadmium telluride (MCT), in the 5 - 50  $\mu\text{m}$  wavelength region.
- Develop detector technologies to improve absolute radiance measurements in the visible to near infrared (0.3 - 8  $\mu\text{m}$  wavelength).
- Develop novel compact lightweight high performance blackbody calibration source that may be enabled by recent developments in high emissivity surface treatments.
- Develop revolutionary compact, lightweight, and high performing infrared spectrometer (5 - 50  $\mu\text{m}$  wavelength).

Proposals should specifically address one or more of the previously listed areas and include:

- Advantages and improvements of the proposed technology relative to current standards.
- Relevance of the technology to NASA's science goals.

*Phase I deliverables* - Feasibility study and documentation of clear path to working prototype in Phase II for hardware topics or complete report characterizing infrared detector non-linearities.

*Phase II deliverables* - Working prototype hardware with thorough documentation of development and complete testing and characterization results.